

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method of manufacturing a gas sensor ~~having~~  
comprising:
  - a. providing a housing containing a reservoir;
  - b. which in use receives~~receiving~~ an electrolyte in the reservoir;
  - c. ~~the method comprising the steps of:~~ impregnating a substrate of a gas porous membrane with a conductive material, so that said conductive material defines an electrical pathway between an electrical contact on a first surface of the membrane and an electrode on a second surface of the membrane; and
  - d. arranging the membrane to seal the reservoir,  
wherein the substrate of the gas porous membrane is impregnated with the conductive material by a wick.
2. (Currently Amended) A method according to claim 1 further including the step of attaching ~~at~~the wick to the electrode.
3. (Original) A method according to claim 2 whereby the wick is pressed or sintered to the electrode.
4. (Original) A method according to claim 3 whereby the wick is sintered to the electrode at a temperature of between 300°C and 370°C.
5. (Currently Amended) A method according to claim ~~[[4]]~~3 whereby the wick is sintered to the electrode at a temperature of between 320°C and 370°C.
6. (Cancelled)
7. (Currently Amended) A method according to claim 1 whereby the gas porous membrane is impregnated by the ~~conductive material is introduced into a substrate via an~~  
the electrode.

8. (Currently Amended) A method according to claim 1 whereby the gas porous membrane is impregnated by the ~~conductive material is introduced into a substrate via an~~ the external connection.

9. (Cancelled)

10. (Currently Amended) A method according to claim 1 whereby gas porous membrane is impregnated by the ~~conductive material in its a melted state is introduced into a substrate.~~

11. (Currently Amended) A method according to claim 1 whereby the electrodes and/or the external connections ~~contact~~ are formed on a substrate ~~the gas porous membrane~~ by any one of the following:

(a) screen printing;

(b) filtering in selected areas from a suspension placed onto the substrate ~~gas porous membrane;~~ or

(c) spray coating; ~~and~~

~~(d) sintering.~~

12. (Currently Amended) A method according to claim 1 whereby the electrodes are ~~is~~ formed on the a first face of the gas porous membrane that is ~~opposite faces of a substrate to the external connections~~ contact.

13. (Currently Amended) A method according to claim 8 whereby the electrodes are ~~is~~ formed on the a second face of the gas porous membrane that is the same face of the substrate as the external connections ~~contact.~~

14. (Currently Amended) A method according to claim 1 wherein ~~a substrate~~ the gas porous membrane and the housing are bonded together using adhesive.

15. (Currently Amended) A method according to claim 1 ~~I1~~ wherein ~~a substrate~~ the gas porous membrane and the housing are bonded using heat and/or pressure so that a material forming the housing melts and impregnates the ~~substrate~~ gas porous membrane, thus forming a strong bond therebetween.

16. (Currently Amended) A method according to claim 1 whereby the permeability of at least one region of ~~a substrate~~ the gas porous membrane to gas is decreased in order to limit the amount of gas reaching ~~an~~ the electrode.

17. (Currently Amended) A method according to claim 16 whereby the permeability of at least one region of the ~~substrate~~ gas porous membrane to gases is decreased by any one or combination of the following steps:

- a) compressing the region;<sub>2</sub>
- b) impregnating the region(s) with wax;<sub>2</sub> or
- c) impregnating the region(s) with a polymer;<sub>2</sub>  
~~and a combination of any of steps a) to c).~~

18. (Currently Amended) A gas sensor comprising:

a. at least first and second ~~an~~ electrodes formed on a ~~planar substrate~~ gas porous membrane;

b. a housing containing a reservoir, which ~~wherein when,~~ in use, the reservoir contains a liquid electrolyte for contacting the ~~first and second~~ electrodes;

c. an electrical contact, for ~~configured to make an~~ making external electrical connection from the gas sensor; ~~and~~

d. a conductive material disposed between ~~an~~ the electrode and the ~~external~~ electrical contact;<sub>2</sub> and

e. a wick being arranged to contact both the electrolyte and the electrode, the wick having at least one aperture formed therein through which the electrolyte can be introduced,

wherein at least a portion of the electrode and a portion of the ~~substrate~~ gas porous membrane substantially adjacent thereto, ~~is~~ are impregnated with the conductive material, the conductive material forming an electrical pathway through the gas porous membrane which connects at least ~~an~~ the electrode to the ~~external~~ electrical contact.

19. (Currently Amended) A gas sensor according to claim 18 wherein the electrodes and/or ~~external connections~~the electrical contact are formed from a porous electrically conductive material containing a catalyst material.

20. (Currently Amended) A gas sensor according to claim 18 wherein the ~~first~~ electrode is a sensing electrode for creating the desired electrochemical reaction between the electrolyte and ~~the~~a gas to be sensed~~;~~.

21. (Currently Amended) A gas sensor according to claim 18 wherein the ~~second~~ electrode is a counter electrode which performs an electrochemical reaction with oxygen.

22. (Original) A gas sensor according to claim 18 further including a reference electrode.

23. (Original) A gas sensor according to claim 18 further including a gas generating electrode.

24. (Currently Amended) A gas sensor according to claim 18 wherein ~~at~~the conductive ~~mass~~material includes a polymer electrolyte.

25. (Currently Amended) A gas sensor according to claim 24 wherein the conductive ~~mass~~material is a plug, pin, or other shaped component suitable for forming an electrical path between the electrodes and ~~external connections~~the electrical contact.

26. (Currently Amended) A gas sensor according to claim 18 wherein the ~~external connections~~electrical contact includes the polymer electrolyte.

27. (Currently Amended) A gas sensor according to claim 18 wherein ~~external connection~~the electrical contact is a metal strip, ~~or wire, which is attached to the substrate~~gas porous membrane.

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Currently Amended) A method of forming~~;~~ an electrical pathway across a microporous membrane having first and second major surfaces~~;~~where the~~which~~

microporous membrane ~~in use~~ is impervious to liquid and permeable to gas, comprising the steps of:

- a.) maintaining sufficient heat to melt a conductive material;
- b.) urging the melted conductive material through pores of the microporous membrane at a first surface by establishing a pressure differential across the first and second surfaces;
- c.) controlling the heat and pressure differential until the melted conductive material emerges at the second surface; and
- d.) allowing the material to cool so as to form a continuous, electrically conductive pathway from the first surface to the second surface while preserving the liquid impermeability and gas permeability characteristics of the microporous membrane.